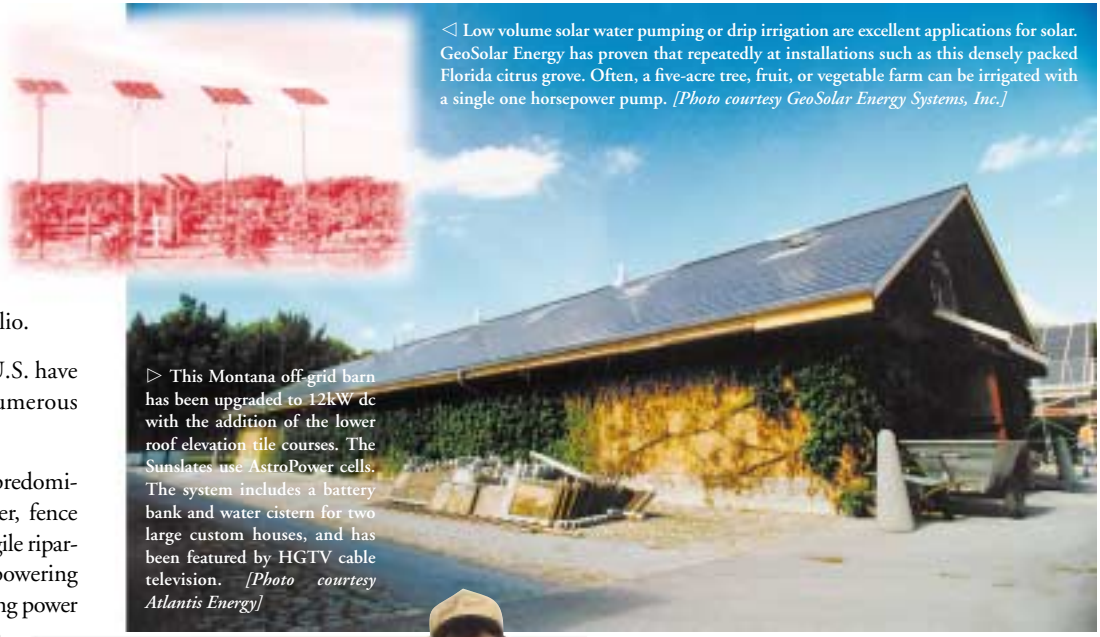
Agricultural applications suitable for PV solutions are numerous. These applications are a mix of individual installations and systems installed by utility companies when they have found that a PV solution is the best solution for a remote agricultural need such as water pumping for livestock or crops. Everyone wins when utilities provide PV services as part of their overall service portfolio.

More than one hundred utilities in the U.S. have integrated PV-powered systems for numerous applications within their service area.

Photovoltaics in agricultural settings is predominantly used for water pumping. However, fence electrification, particularly for isolating fragile riparian areas, is a growing use, as is PV for powering remote farm and ranch homes and providing power for the labor-saving tools necessary to run a modern operation. Other agricultural uses run to fly control with PV-powered sprayers, PV for a fish farming compressor to aid with pond aeration, or PV-provided electricity for poultry cooling fans.

In short, farmers and ranchers often choose PV because it saves money. Utilities, likewise, offer PV services because it saves money.

As with any use of PV, the agricultural applications are limited only by one's imagination.



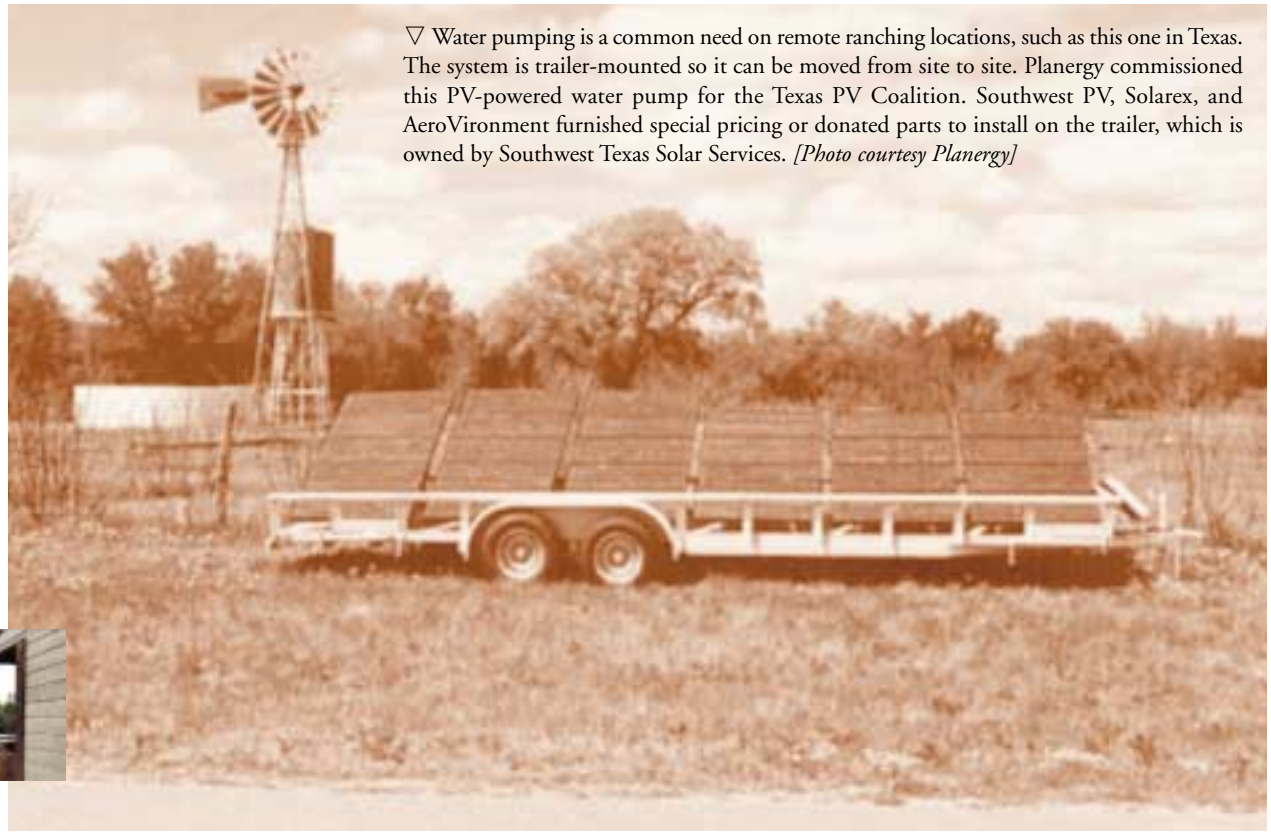
◁ Low volume solar water pumping or drip irrigation are excellent applications for solar. GeoSolar Energy has proven that repeatedly at installations such as this densely packed Florida citrus grove. Often, a five-acre tree, fruit, or vegetable farm can be irrigated with a single one horsepower pump. *[Photo courtesy GeoSolar Energy Systems, Inc.]*

▷ This Montana off-grid barn has been upgraded to 12kW dc with the addition of the lower roof elevation tile courses. The Sunslates use AstroPower cells. The system includes a battery bank and water cistern for two large custom houses, and has been featured by HGTV cable television. *[Photo courtesy Atlantis Energy]*

▷ Cattle aren't the only customers for water provided through PV-powered systems. Here, a herd of American bison roam the Great Plains in Nebraska, with the help of a SunRise® sealed-piston submersible pump made available through Dankoff Solar, Santa Fe, New Mexico, designers of the 300 watt installation. Siemens Solar modules were used, with the array mounted on Zomeworks Track Rack®. The installation was made by Northwest Rural Public Power, Hay Springs, Nebraska. *[Photo courtesy Dankoff Solar Products]*

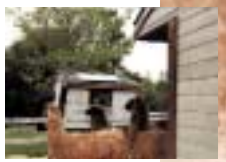
◁ Parker McCrory, Kansas City, Missouri is one of the largest buyers of PV panels in the United States. The company's 6-volt solar powered fencer is sold in huge volume to electrify more than one hundred thousand miles of fences for agricultural purposes in the U.S. Solarex modules are used in all ParMak's solar fencing products, which are custom-manufactured at Solarex' facility. *[Photo courtesy Parker McCrory]*

△ SunWize Technologies introduced the first commercial, completely automatic solar electric ice making plant in Chorreras, Chihuahua, Mexico, to benefit a fishing cooperative of about 70 families. Previously, the coop depended on buyers traveling from Chihuahua to purchase and transport their catch, since they had no refrigeration capabilities of their own. The Planta de Hielo SunWize has brought economic independence to the cooperative. *[Photo courtesy SunWize Technologies, Inc., a Besicorp Ltd. Company]*



▽ Water pumping is a common need on remote ranching locations, such as this one in Texas. The system is trailer-mounted so it can be moved from site to site. Planergy commissioned this PV-powered water pump for the Texas PV Coalition. Southwest PV, Solarex, and AeroVironment furnished special pricing or donated parts to install on the trailer, which is owned by Southwest Texas Solar Services. *[Photo courtesy Planergy]*

▷ A Pennsylvania llama farm benefits from photovoltaics. In the summertime the animals love sitting in front of fans. Costs would have been prohibitive to electrify each of the llama 'condos' by any means other than PV, so each home has been fitted with 300 watts of solar electricity (four 75-watt AstroPower panels each). *[Photo courtesy Atlantic Solar]*



▽ Currin Corporation, Midland, Michigan, designed and installed this 900 watt PV array at the Hickory Ridge Farm in Chelsa, Michigan. The system is a hybrid, with diesel generator, wind, and utility power sources in addition to the PV, all powering a farm home and shop. The system includes ten Siemens Solar SR-90 PV modules, a 14 kWh 24-volt bank of Concorde sealed AGM batteries, and a Trace 4.0 kVA sinewave inverter. *[Photo courtesy Currin Corporation]*

▷ Ranching operations could benefit from a PV-powered gate opener, such as this one installed at Maroon Lake near Aspen, Colorado, in the White River National Forest. *[Photo courtesy Sandia National Laboratories]*